SOME OBSERVATIONS ON OUR ALIEN FLORA

By J. E. S. SOUSTER, Forrestfield.

The most marked feature of our climate is the strong contrast between the hot, dry summers and the wet, comparatively mild winters. In a word, this is a "Mediterranean" climate, so called from its being typical of much of that part of the world, though similar conditions are found in parts of South Africa, Chile, California and South Australia. Such a climate is reflected in the vegetation of those regions, the herbaceous plants being commonly either annuals or else perennials with a summer resting period, while the trees and shrubs are adapted to withstand the unfavourable summer season by their sclerophyllous structure. That is to say, the foliage is typically evergreen, thick, often narrow, frequently dull green or greyish, and sometimes much reduced either to phyllodes, which are in many cases sharply pointed, or still more so to minute scales, the leaf functions being taken over by the green stems. These features are well seen in the trees and shrubs of our coastal plain and of the Jarrah forests.

Under these circumstances it is not surprising that among the foreign plants which have succeeded in establishing themselves here, a considerable number are natives of similar climates in other parts of the world. Attention was first drawn to the number of South African plants naturalised here, some so well as to be troublesome weeds. The Veldt grasses *(Ehrharta spp.)*, the so-called Guildford grass *(Romulea rosea)* which is nearer a Crocus than a true grass, the Watsonias, the Hottentot Fig or Pig-face *(Carpobrotus edule)*, the Double Gee *(Emex australis)*, several species of *Oxalis* (the Cape Tulips) and the Cape Weed *(Cryptostemma calendulaceum)* are examples which will come readily to mind.

To avoid the danger of jumping to hasty generalisations, a list was compiled of all the naturalised plants recorded in the *Enumeratio Plantarum Australiae Occidentalis* (1931) by the Government Botanist, Mr. C. A. Gardner, with their countries of origin as given in the *Index Kewensis*. It was first noticed that although this list contained 253 species belonging to 40 families, more than half were included in the three families Gramineae, Papilionaceae and Compositae. The high representation of Gramineae and Papilionaceae reflects their agricultural importance. The proportion of Compositae is not unduly high as about ten per cent of the world's seed plants belong to this, the largest family.

Analysing the list according to countries of origin, it was found that 71 species were "typically" Mediterranean against 35 South African, three species being common to the two regions. A plant was regarded as typically Mediterranean if its range was given in the *Index Kewensis* as the "Mediterranean Region" or if some country or locality in that region was specifically mentioned (in plant geography the "Mediterranean Region" is commonly understood to extend from the Black Sea to the Canary Isles). Where the range of a plant was given simply as "Europe", "Europe

and North Africa", "Europe and West Asia" and the like, indicating a fairly wide distribution, that plant was not regarded as typically Mediterranean, though in many cases it would be found within the limits of that area. Though it is obvious that figures so derived permit of no great accuracy, we may say that the Mediterranean Region has contributed about twice as many of our naturalised plants as South Africa, and that these two areas together have supplied about 40% of our alien flora.

The impression is gained that the Mediterranean element is less aggressive though more valuable than the South African. This is particularly the case in the family Papilionaceae where against the one South African contribution, the shrub *Psoralea pinnata*, the Mediterranean is represented by 27 species, the majority having some, or a few very considerable, value as pasture plants, e.g., *Trifolium subterraneum*. Probably few of these could long survive outside the artificial environment provided by agriculture, whereas we notice the comparatively worthless South Africans more actively competing with our native plants, though it may be doubted if they could ever establish themselves to any appreciable extent where the native plant cover had never known human interference. It would be an interesting study, in an area where competition already exists and where further artificial interference can be withheld, to map the areas occupied by the opposing forces and to follow the course of events over a number of years.

Families represented in our Alien Flora

Family.	No. of spp.	Family.	No. of spp.
		Forward	165
Gramineae	52	Euphorbiaceae	4
Araceae	1	Malvaceae	1
Liliaceae	1	Cactaceae	2
Iridaceae	4	Onagraceae	2
Urticaceae	1	Umbelliferae	3
Polygonaceae	6	Primulaceae	2
Chenopodiaceae	3	Gentianaceae	1
Amarantaceae	2	Asclepiadaceae	1
Phytolaccaceae	1	Hydrophyllaceae	1
Aizoaceae	2	Borraginaceae	2
Caryophyllaceae	9	Verbenaceae	1
Ranunculaceae	1	Labiatae	8
Papaveraceae	5	Solanaceae	10
Cruciferae	13	Scrophulariaceae	9
Resedaceae	2	Plantaginaceae	3
Rosaceae	2	Rubiaceae	1
Papilionaceae	51	Cucurbitaceae	2
Geraniaceae	4	Campanulaceae	1
Oxalidaceae	3	Lobeliaceae	1
Linaceae	2	Compositae	33
Forward	165	Total spp	253

SUMMARY.

Number of families	40
Number of species	253

Prineipal families represented, number of representative speeies and pereentage of naturalised flora.

(1)	Graminae	52 spp.	20.6%
(2)	Papilionaceae	51 spp.	20.1%
(3)	Compositae	33 spp.	13.0%
		136 spp.	53.7%

The number of naturalised plants would be somewhat increased if brought up to date, but the general eonelusions drawn here would not be materially affeeted.

AGGRESSION IN BIRDS
with particular attention to
THE AGGRESSION OF MIXED FLOCKS

By ERIC H. SEDGWICK, Caron.

Of reecnt years students have given mueh attention to bird behaviour. Mueh of this attention, however, appears to have been coneentrated upon the study of territory and display assoeiated either closely or remotely therewith, while aggression—a marked phase of bird behaviour—seems to have received little attention except in respect of the defenee of territory. I would suggest, then, that aggression is a relatively simple type of behaviour, the study of whieh might possibly throw light on the more eomplex problems of territory and display.

Aggression among birds appears to be divisible into two elasses, not always elearly defined, which might be termed *genuine aggression* and *display aggression*. The former type is well exemplified by the easily provoked attaeks of Magpies. These attaeks are usually silent, determined and carried out with intent to inflict damage, as most Australian bird observers have learned at the eost of minor sealp injuries. The aggressive display of the Banded Plover falls into the seeond category. Alarming as these attaeks are, they are never, to the best of my knowledge, pressed home and may therefore be summarised as noisy and effective bluff.

A seeond possible elassifieation of aggressive behaviour is into *individual aggression* and *mass aggression,* the former being the reaction of one or two birds to a situation clearly discernible, while the latter is the reaction of a flock primarily to a situation, but also, sceondarily, to the alarm cries and behaviour of the rest of the flock. "Mass aggression" ean again be subdivided into the *specifie aggression* of unmixed flocks and the *mixed aggression* of flocks made up of two or more speeies.

Specifie mass aggression appears to be comparable with the other social aetivities sueh as the foraging of flocks of eormorants